

Application No. 10/770,509
Amendment dated March 28, 2006
Reply to Office Action of December 28, 2005

Docket No.: 0142-0452P

AMENDMENTS TO THE DRAWINGS

The attached sheet(s) of drawings includes changes to Fig 4 wherein numeral 70 has been crossed out in red. Approval of the drawing is respectfully requested.

REMARKS

The drawings have been objected to as failing comply with 37 CFR 1.84(p)(5) for the reasons set forth in paragraph 1 of the Examiner's Office Action Letter. As the Examiner will note, it is proposed to amend Fig. 4 in the manner shown in "red" on the attached copy of Fig. 4. In this regard, since numeral 70 generally refers to Fig. 4 in its totality, it is believed that the elimination of numeral 70 from both Fig. 4 and the specification of the present application can best solve the Examiner's objection. Also, the specification has been amended to satisfy the Examiner's objection with respect to paragraph 2 of the Office Action Letter.

Claim 1 has been objected to by the Examiner because of certain language utilized in the second to last line of claim 1. As the Examiner will note, claim 1 has been amended to comply with the Examiner's rejection. In addition, claim 1 has been further amended to editorially clarify the contents of claim 1.

Claim 10 has been objected to for the reasons set forth in paragraph 4 of the Examiner's Office Action Letter. As the Examiner will note, claim 10 has been amended to eliminate the Examiner's objection, and accordingly it is believed that this objection has been eliminated.

Claim 14 has been rejected by the Examiner under 35 USC 112, first paragraph, as failing to comply with the written description requirement. As the Examiner will note, the specification has been amended to provide written support for the language present in claim 14, and accordingly, it is believed that this rejection has been eliminated.

Claim 1-17 have been rejected by the Examiner under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. This rejection is respectfully traversed.

As the Examiner will note, claims 1, 3, 5, and 8 have been amended to provide the necessary antecedent basis as noted by the Examiner, and accordingly, it is believed that the rejection of these claims has been eliminated.

Claims 1-5 and 7-17 have been rejected by the Examiner under 35 USC 103(a) as being unpatentable over Tominaga, U.S. Patent 6, 575,557 in view of Riou, U.S. Patent 6,626,511. This rejection is respectfully traversed.

The present invention is directed to a system for adjusting the angular orientation of print head cartridges arranged on a carriage of a printer, such as for example, a laser jet printer or an ink jet printer. The system of the present invention resolves the problem of adjusting the orientation of print head cartridges without adding much weight to the moving cartridge. By following the teachings of the present invention, an increase in the moment of inertia of moving parts and a corresponding increase in the demands for the drive and control system can be avoided. It is believed that the prior art relied upon by the Examiner does not recognize the problems defined by the present invention and thus the prior art cannot possibly suggest a solution to such a problem.

The Tominaga reference, U.S. Patent 6,575,557 discloses a system for positioning and adjusting a cartridge, in particular a rotation in a plane extending parallel to the Y-direction. In this connection, please refer to Col. 6, lines 45-47 where it is stated that "Next, the angular deviation of the ink jet head 20 with respect to the sub-scanning direction is adjusted," and Col. 6, lines 55-58 where it is stated that "Thus, the ink jet head 20 is rotated by a predetermined amount in the main scanning direction of the carriage 30, using this protrusion 38 as a reference." On the other hand, the present invention, as recited in claim 1 of the present application, clearly describes a system for adjusting the angular orientation in a vertical plane perpendicular to the Y-direction, wherein the Y-direction is defined as the main scanning direction. One skilled in the art would certainly recognize that there is only one plane perpendicular to the Y-direction. This plane is spanned by two orthogonal vectors extending perpendicular to a vector in the Y-direction. To clearly point out to the Examiner the conception of this plane, as described in the present application, an illustration of this plane with respect to the Y-direction, indicating the rotation in this plane has been produced and is appended to the present Amendment as Appendix A. This adjustment has a completely different influence on the position of the print head and the orientation of the print head with respect to the medium.

Moreover, as recognized by the Examiner, the Tominaga patent does not disclose or suggest second adjusters arranged remote from the carriage for adjusting the angular orientation of the print head carriage or groups of print head carriages, said second adjusters selectively, operatively, coupled with the first adjusters of a selected one of the print head carriages or groups of print head carriages.

The Examiner, recognizing the deficiencies of the Tominaga patent has further relied upon the Riou reference, U.S. Patent 6,626,511B2 in an attempt to suggest the present invention. However, it is the Applicants' position that the combination of the Riou patent, with the Tominaga patent represents an incompatible combination of prior art references. In particular, there appears to be no disclosure or suggestion that the remote adjustment means of the Riou patent could interact with the orientation adjusters of the Tominaga patent. Combining the references as suggested by the Examiner is particularly difficult in that the respective adjustment means operate in different directions. With this in mind, even if the Tominaga and Riou references are considered to be compatible, they still would not suggest the present invention. Thus, the combination of references do not disclose second adjusters arranged remote from the carriage for adjusting the angular orientation of the nozzles in a plane perpendicular to the Y-direction. Furthermore, there is no disclosure or suggestion that the second adjusters are selectively, operatively coupled with the first adjusters.

The system of the present invention resolves the problem of adjusting the orientation of the nozzles without adding much weight to the moving carriage. Thus, the present invention has achieved an advantageous result without increasing the moment of inertial of the moving parts of the system thereby increasing the demands for the drive and control system. The prior art relied upon by the Examiner has neither recognized the problem defined by the present invention and correspondingly cannot possibly recognize the Applicants' solution to this problem. Accordingly, a person skilled in the art who is confronted with the problem of adjusting the orientation of the nozzles while not increasing much weight to the movable carriage would not be motivated to combine the teachings of the Riou and Tominaga patents. In any event, even if

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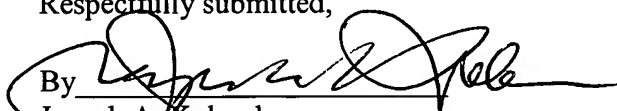
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arguendo, such a combination of references would be possible, said combination would still not suggest the present invention.

Accordingly, in view of the above amendments and remarks reconsideration of the rejections and objections and allowance of the claims of the present application are respectfully requested.

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Respectfully submitted,

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Attachments: Annotated Fig. 4
Appendix A